Small Business Innovation Research/Small Business Tech Transfer

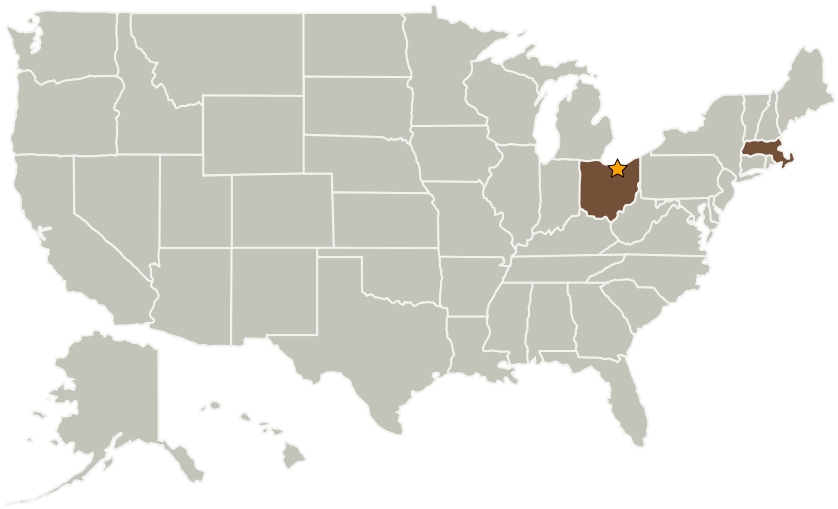
High Performing, Low Temperature Operating, Long Lifetime, Aerospace Lubricants, Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

Physical Sciences Inc. (PSI) proposes to synthesize, characterize, and test new ionic liquids and formulations as lubricants for aerospace applications. The compounds will operate effectively at low temperatures with appropriate viscosities, high viscosity indices, large heat capacities, and high thermal decomposition temperatures. The innovative, versatile, lubricants will also have an extremely wide liquidus range, nearly zero vapor pressure, low friction coefficients, small wear effects, and low outgassing for long-term operational stability in aerospace systems. In the Phase II program, additional ionic liquids will be identified, synthesized, characterized, formulated with various additives, and tested as liquid lubricants and base lubricants in greases for use at low temperature. Their tribological performance will be evaluated in an aerospace system(s) for TRL 3.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Physical Sciences, Inc.	Supporting Organization	Industry	Andover, Massachusetts

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

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Primary U.S. Work Locations	
Massachusetts	Ohio

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.3 Mechanical Systems
    - TX12.3.7 Mechanism Life Extension Systems